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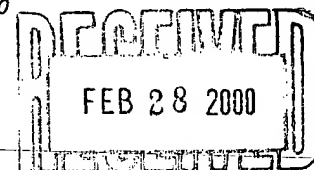
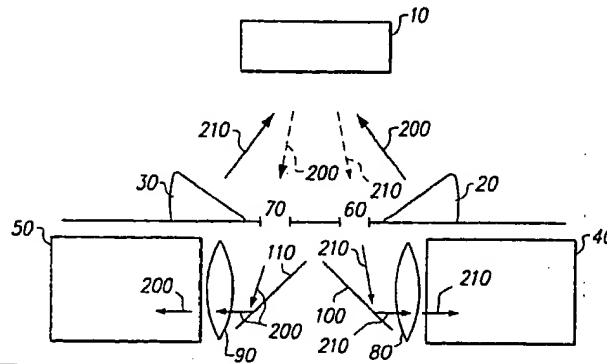
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(21) International Application Number: PCT/US99/12193 (22) International Filing Date: 1 June 1999 (01.06.99) (30) Priority Data: 09/092,245 5 June 1998 (05.06.98) US (71) Applicant: SILICON LIGHT MACHINES [US/US]; Suite 115, 385 Moffett Park Drive, Sunnyvale, CA 94089 (US). (72) Inventor: CORBIN, Dave, B.; 26950 Orchard Hill Lane, Los Altos Hills, CA 94022 (US). (74) Agents: HAVERSTOCK, Thomas, B. et al.; Haverstock & Owens LLP, Suite 420, 260 Sheridan Avenue, Palo Alto, CA 94306 (US).		(81) Designated States: AL, AM, AU, BB, BG, BR, CA, CN, CZ, EE, ES, FI, GE, HU, IS, JP, KG, KP, KR, LK, LR, LT, LV, MD, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, TR, TT, UA, UZ, VN, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report. (88) Date of publication of the international search report: 10 February 2000 (10.02.00)	

(54) Title: STEREO HEAD MOUNTED DISPLAY USING A SINGLE DISPLAY DEVICE



(57) Abstract

A single display device (10) is mounted within a head-worn apparatus to produce both a left image and a right image. The left image is directed to a right eye of the user, and the right image is directed to the left eye of the user. When in the stereoscopic mode, the right and left images differ from each other such that when viewed by the user, the combined right and left images give the user a stereoscopic, three-dimensional effect. When worn on the head of the user, the device is properly aligned to provide the left image to the right eye and the right image to the left eye. Further, as the user moves, the present invention remains properly aligned such that the user can continue viewing the left image with the right eye and the right image with the left eye independent of movement by the user so long as the user keeps wearing the device. A plurality of pixels are collected as the display (10), wherein each pixel is formed of a grating light valve. The modulation of light by the grating light valve is configured to be accomplished sequentially and also sufficiently fast to multiplex both complete right and left images in a single time frame thereby preventing flicker. By using a single display, the device is inherently aligned to produce accurate right and left images viewed by each respective eye without internal adjustments. Further, by using the grating light valve, the user is only exposed to reflected light rather than to harmful radiation such as from a cathode ray tube. Additionally, forming the display of grating light valves allows formation of two images without the use of any filters owing to the speed of grating light valves.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 99/12193

A. CLASSIFICATION OF SUBJECT MATTER

G02B27/22, G02B26/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

G02B, H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	GB 2296152 A (GEC-MARCONI AVIONICS LTD.) 15 June 1996, page 2, line 16 - page 4, line 17, page 6, line 20 - page 10, line 16.	1, 5, 6
A		2, 7, 10-13, 15-19, 22, 23, 25, 26, 28, 29
Y	GB 2319424 A (DAEWOO ELECTRONICS CO. LTD.) 20 May 1998, fig. 4, 5, 7, page 5, line 14 - page 6, line 11, page 7, line 21 - page 8, line 16.	1, 5, 6

☒ Further documents are listed in the continuation of box C.

☐ Patent family members are listed in annex.

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	--	7, 10, 15, 16
A	WO 94/29761 A (A.T.M.A.S.R.L.) 22 December 1994, fig. 1-4, 8.	1, 5, 7, 10, 15, 16, 22, 28
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A, P	WO 98/41893 A (SILICON LIGHT MACHINES, INC.) 24 September 1998, fig. 4, 5, 8, 8A, 9-11, 18, page 18, lines 7-12 (cited in the application).	1-4, 6, 7-9, 11, 15, 17, 22- 24, 25, 26, 28, 29

ANHANG

zum internationalen Recherchen-
bericht über die internationale
Patentanmeldung Nr.

ANNEX

to the International Search
Report to the International Patent
Application No.

ANNEXE

au rapport de recherche inter-
national relatif à la demande de brevet
international n°

PCT/US 99/12193 SAE 239316

In diesem Anhang sind die Mitglieder
der Patentfamilien der im obenge-
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This Annex lists the patent family
members relating to the patent documents
cited in the above-mentioned inter-
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